Oxytropis nana Nutt., a Wyoming endemic collected by Thomas Nuttall on his journey across Wyoming in 1834

WYOMING NATIVE PLANT SOCIETY
Box 1471
Cheyenne, WY 82003

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Treasurer's Report - Balance as of February 20, 1991: $471.09; deposits: dues $36.50; disbursements: newsletter printing $16.02, scholarship $300.00, Secretary of State $3.00; new balance as of May 15, 1991: $188.57. RD

Scholarship - The Board met in March in Laramie and voted to give a scholarship of $300.00 to Robin Jones, a student at the University of Wyoming and the only applicant. Robin's project is "A Floristic Survey of the Owl Creek / Bridger Mountains of Wyoming." This area has received very little collecting because it is rugged with difficult accessibility. RD

Dues - Dues are due by the annual meeting. Unless you have paid in advance, a dues notice is enclosed with the newsletter. RD

Election of Officers - Our nominees for officers are: President - Nancy Kastning, Vice-President - Dick Scott, Secretary-Treasurer - Robert Dorn, and Board Member - Walt Fertig. Write in votes are acceptable also. Mail votes are accepted before the annual meeting. Mary Neigbours is the carryover Board Member. RD

Annual Meeting - The annual meeting will be held June 22 and 23, 1991, in the Big Horn Canyon - Pryor Mountains area. We will meet at 8:00 am on June 22 at the Big Horn Canyon National Recreation Area Visitor Center at the junction of highways 14A and 789-310 on the east side of Lovell. We will first visit the Big Horn Canyon area where we hope to find several rare plants including Erigeron allocotus and Eriogonum brevicaule var. canum. In the Pryor Mountains we will be looking for Penstemon caryi and Shoshonea pulvinata, two local endemics. We should encounter a large number of less rare but unusual desert and limestone species including Stanleya tomentosa, Cryptantha cana, Platyschkuhria integrifolia, Sphaeromeria capitata, Wyethia scabra, Phacelia ivesiana, and Tiquilia nuttallii. Here is an opportunity to become familiar with the six families that have been presented in the newsletter this past year with the help of our many experts. Come prepared with plenty of water and food as well as hiking and camping gear if you plan to camp. There are somewhat developed campgrounds in the adjacent Big Horn National Forest and on the Big Horn Canyon National Recreation Area. The second day (23rd) is open for a field trip to any nearby area if there is interest. RD

Erythronium Research - In the summer of 1990, the WNPS awarded me a scholarship to research the glacier lily (Erythronium grandiflorum Pursh). This beautiful wildflower is one of the first flowers to emerge from under the retreating snow in late spring and early summer. My initial interest was to see if this species was capable of photosynthesizing while still snowbound. On my first day of field work, I quickly found out they did not, putting my whole field season into a tizzy and causing a hasty retreat. Faced with the possibility of being a 7-11 clerk for the rest of the summer, I re-grouped and threw myself back into the fray. Loaded down with about 75 lbs. of sensitive scientific instruments (which my professor told me were irreplaceable, while I was not), I measured photosynthesis, light levels in the snow, and soil and snow temperatures in the field (all the while gaining several pounds of mud on my clothes and a great tan), then brought iced leaf samples back to UW for chemical analysis. I found several unexpected results. First, this species constructs almost all of its photosynthetic chemistry while still under deep snow, in conditions of extreme cold and very low light. Upon emergence, this species is literally ready and raring to go! However, the alpine environment is fickle, and the glacier lily cautiously does not get down to the serious business of cranking up photosynthesis until several days (sometimes up to 3) after emergence. This seems to be tied to soil temperature, which reaches its peak levels at about the same time. Despite the setbacks, the mosquito bites, and the wet, wet cold of this work, I enjoyed myself fully, and I'm grateful that the WNPS gave me a help for the experience. What's really scary is that I'm going to do it all again next summer, this time with bug spray. EH

Wyoming Plant Families

Family 5: Fabaceae (alternate name: Leguminosae), Pea Family

This is the fifth largest family of flowering plants in Wyoming with 133 species of which 57 are in one genus, Astragalus, our second largest genus. Common representatives of the family include lupine, alfalfa, sweetclover, locoweed, clover, and vetch. The flower in most of our species is very distinctive. It is the typical pea flower with 4 petals consisting of a banner, 2 wings, and a keel (see Figure A). The fruit is a legume (pod) or loment (Figures F & G) similar to a pea pod but usually smaller. The leaves are almost always compound with 3 or more leaflets per leaf. The base of the leaf can usually be identified by the presence of stipules (Figure C). Some species like the lupines and clovers have all the leaflets attached at the same point (palmate) while others like the locoweeds have the leaflets attached at different points along an axis (pinnate). The combination of compound leaves, irregular flowers (petals asymmetrical or of different shapes) and usually pea-like, and 5 to 10 stamens will separate most of our species from all other families. Find a clover, locoweed, lupine, or alfalfa and study the petals and leaves. You might also look at a domestic pea or bean flower. Watch for other species that belong to this family.

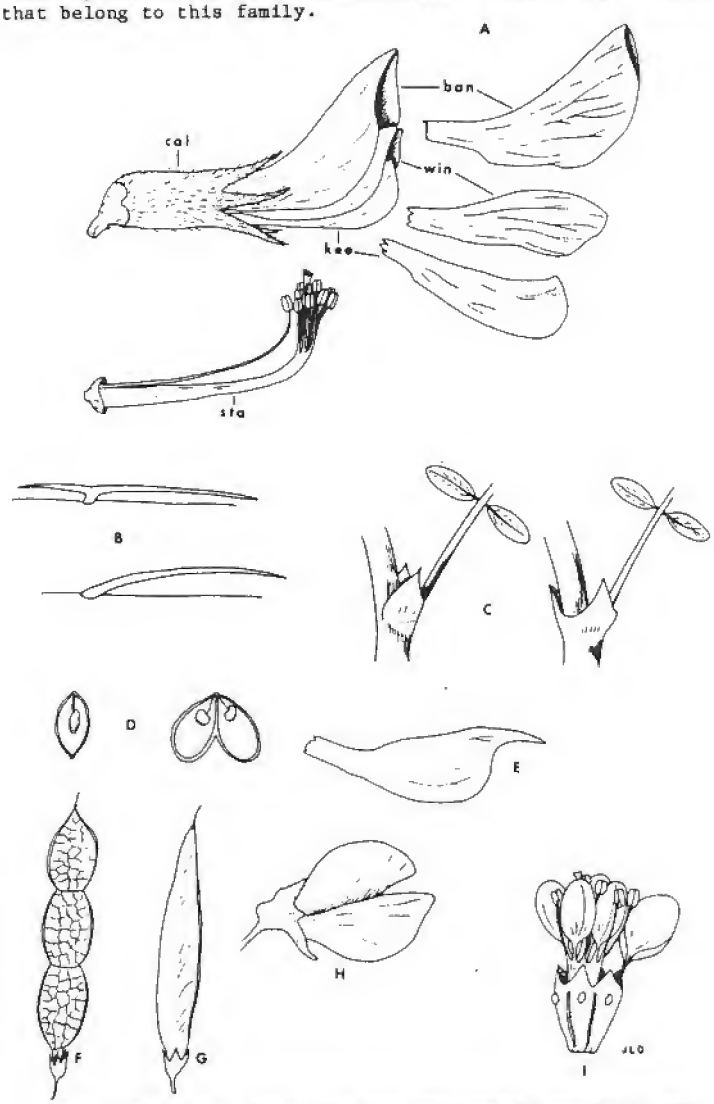

Figure. Fabaceae. A. Intact (upper left) and dissected (lower left & right) flower of **Astragalus missouriensis** (x 3.8): cal = calyx, ban = banner, win = wing (one of dissected pair not shown), kee = keel, sta = stamens enclosing pistil. B. Leaf hairs (x 34): dolabriform above, simple below. C. Stipule types (x 2.7): free opposite petiole at left, connate opposite petiole at right. D. Cross sections of fruits (x 7.5): **Astragalus miser** at left with one locule, **Astragalus adsurgens** at right with two locules. E. Keel petal of **Oxytropis** (x 3.8). F. Loment of **Hedysarum** (x 2.7). G. Legume (x 2.7). H. Flower of **Lupinus argenteus** (x 3.8). I. Flower of **Dalea candida** (x 7.5).

Family 6: Scrophulariaceae, Figwort Family

This is the sixth largest family of flowering plants in Wyoming with 102 species. Common representatives of the "scroph" family include Indian paintbrush, monkey flower, lousewort, beardtongue, and speedwell. The flower in most species is irregular with the petals united at least at the base (see Figure). Anther-bearing stamens are usually 2 or 4, there is 1 style, and the ovary and fruit (a capsule) usually have 2 chambers with several to many ovules or seeds. Our state flower, the Indian paintbrush, is only one of the fifteen species of Indian paintbrush found in the state. The color is often more conspicuous on the bracts than on the flowers (Figure A). Beardtongue gets its name from one stamen having a tuft of usually yellow hairs at its tip rather than an anther (Figure H). The common pink-flowered elephanthead of our mountain bogs is a member of the lousewort genus (Pedicularis). The cultivated, and often weedy, butter-and-eggs and toadflax belong to the genus Linaria (Figure C). Find several representatives of the family and compare the flower parts with the figures.

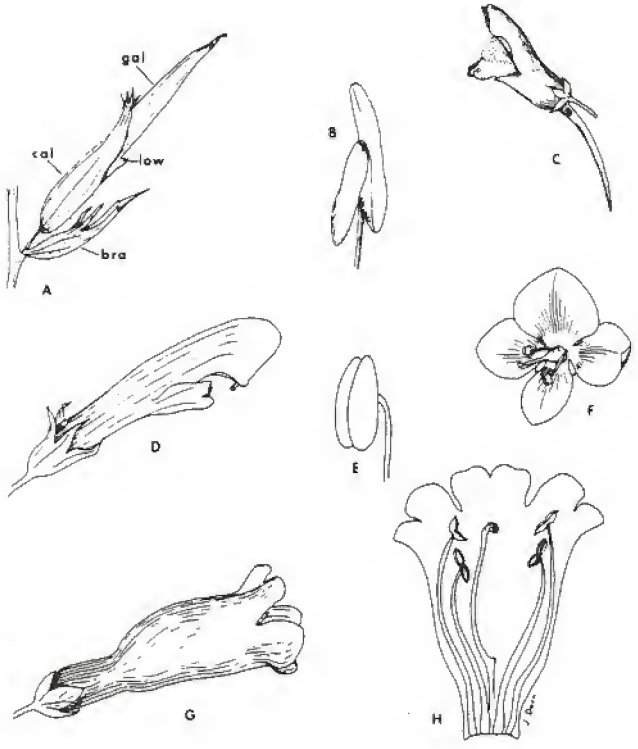

Figure. Scrophulariaceae. A. Flower of **Castilleja linariifolia** (x 1.4): bra = bract, cal = calyx, gal = galea (upper lip of corolla), low = lower lip of corolla. B. Stamen of **Castilleja** (x 3). C. Flower of **Linaria vulgaris** (x 1.4). D. Flower of **Pedicularis bracteosa** (x 2). E. Stamen of **Pedicularis** (x 7). F. Flower of **Veronica** (x 7). G. Flower of **Penstemon** (x 1.7). H. Corolla of **Penstemon** split down one corolla lobe (note sterile stamen at center).

The six families covered so far account for 50 percent of all our species. By knowing these six families, you should be able to place one of every two species into the correct family. RD

Louis O. Williams 1908-1991

Louis Williams, the first life member of the Wyoming Native Plant Society, died on January 7, 1991, at age 82. Louis was born in Jackson, Wyoming, and grew up on a ranch between Jackson and Wilson. He met Aven Nelson one day along Flat Creek in Jackson Hole while fishing. Nelson was gathering plant specimens. Louis got his bachelors and masters degrees in botany under Nelson at the University of Wyoming and later his doctorate at Washington University and the Missouri Botanical Garden under Jesse Greenman. His masters project

was a revision of Rocky Mountain orchids. For his doctorate he monographed the bluebells (Mertensia) of North America. The monograph was published in 1937 and remains the primary reference for the genus. Louis and his wife Terua collected plants in Wyoming in the 1930's. Several new species were discovered including Erigeron allocatus Blake and Penstemon acaulis L. O. Williams, which are considered rare species. Recently, a new species from the Big Horn Mountains was named for him, Cymopterus williamsii Hartman & Constance. After his doctoral studies, Louis went to the Ames Orchid Herbarium at Harvard University for seven years where he was editor of the American Orchid Society Bulletin and completed a treatment on the Orchidaceae of Mexico. During World War II, he worked on a rubber procurement project in Brazil. Under his direction 30,000 plant specimens were sent back to Harvard. After a brief return to Harvard after the war, he moved on to Honduras for eleven years where he taught and built up a large herbarium of Central American and Mexican plants. He then returned to the United States to work for the USDA Plant Industry Station in Maryland. While in this position, he spent four months in Africa searching for economic plants. In 1960 he moved to the Field Museum in Chicago where he became department head in 1964. Here he led the completion of the 13 volume Flora of Guatemala. Louis retired in 1973. Through his career he published about 300 scientific articles and collected over 43,000 plants, an impressive accomplishment. RD

Contributors This Issue - RD = Robert Dorn, EH = Erik Hamerlynck.

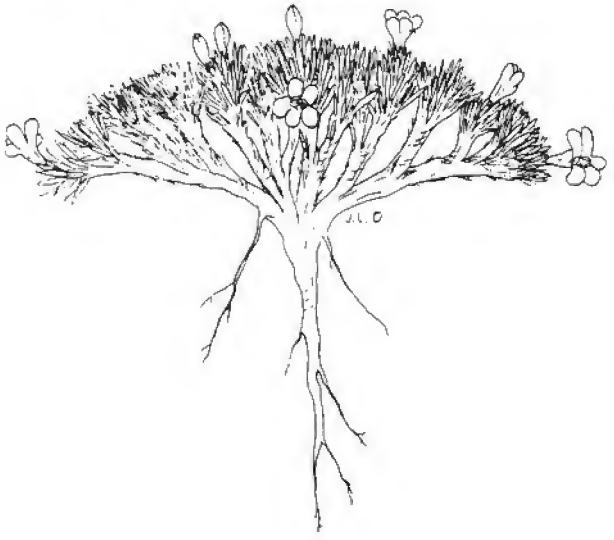

Fig. 50. Penstemon acaulis Williams

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